KALITENKO, V., inzh.

Effect of the clearance in the piston-cylinder combination on the operation of the compressor. Khol.tekh. 37 no.4:25-28 Jl-Ag '60. (MIRA 13:11)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche im.N.E.Baumana.
(Compressors)

KALITENKO, V.G., inzh.

Securing the interchangeability of basic parts and units of piston compressors. Vzaim.i tekh. izm.v mashinostr.; mezhvus. sbor. no.3:26-65 '61. (MIRA 14:8)
(Interchangeable mechanisms)
(Compressors)

KALITENKO, V.G., assistent

Investigating and developing allowances for dimensions of basic piston-machine parts according to operating requirements. Izv.vys.-ucheb.zav.; mashinostr. no.11:178-189 '61. (MIRA 14:12)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. N.E.Baumana.
(Tolerance (Engineering))

KALITENKO, V.G., kand. tekhn. nauk

Functional interchangeability in the manufacture of motors and compressors. Standartizatsiia 28 no.9:33-36 S '64. (MIRA 18:2)

KALITENKO, V.G., kand. tekhn. nauk; MOSAKOV, Yu.P., retsenzent

[Precision calculations in designing piston compressors] Tochnostnye raschety pri proektirovanii porshnevykh kompressorov. Moskva, Mashinostroenie, 1965. 222 p. (MIRA 18:1)

FORTUSHNYY, V.A., kand. veterinarnykh nauk; GOVOROV, A.M., kand. veterinarnykh nauk; TSYBENKO, I.Z., veterinarnyy vrach; BOYCHENKO, A.S., veterinarnyy vrach; KALITENKO, Ye.T., veterinarnyy vrach

Stachybotryotoxicosis in cattle and its treatment. Veterinariia 36 no.9:67-70 S '59. (MIRA 12:12)
(Cattle--Diseases and pests)
(Mushrooms, Poisonous)

KALITEYEVSKAYA, T.M.

X-ray examination of gastrointestinal changes in lead poisoning.
Sov.med. 21 no.4:96-98 Ap '57. (MLRA 10:7)

1. Iz rentgenologicheskogo otdeleniya (zav. - prof. K.P.Molokanov) klinicheskogo sektora (zav. - prof. A.L.Morozov) Instituta gigiyeny truda i professional'nykh zabolevaniy Akademii meditsinskikh nauk SSSR (dir. - deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR prof. A.A.Letavet).

(LEAD POISONING, compl.
gastrointestinal changes, x-ray exam.)
(GASTROINTESTINAL SYSTEM, in various dis.
lead pois., x-ray exam.)

LOBACHEV, S.V., PANCHENKO, T.N., MARINKOV, G.M., KALITEYEVKAYA, V.F.

Danger zones of the heart; a preliminary report of an experimental study. [with summary in English] Eksper.khir. 1 no.1:39-47 Ja-F '56 (MIRA 11:10)

1. Iz pervoy khirurgicheskoy kliniki Instituta imeni Sklifosovskogo (zav. klinikoy-doktor meditsinskikh nauk S.V. Lovachev, glavnyy khirurg- prof. B.A. Petrov, direktor instituta - zasluzhenyy vrach respubliki M.M. Tarasov).

(HEART, wounds and injuries,
exper., dterm. of danger zones (Rus))
(WOUNDS AND INJURIES, exper.
hear, determ. of danger zones (Rus))

CHAZOV, Ye.I.; ANDREYENKO, G.V.; SPEKTOROVA, Z.G.; RAYEVSKAYA, V.V.; MOISEYEV, S.G.; BABSKIY, Ye.B.; BREDIKIS, Yu.I.; KUSHKIY, R.O.; KALITEYEVSKAYA, V.F.; BEREZOV, Ye.; POKROVSKIY, A.V.; MEL'NIK, I.Z.; AGRANENKO, V.A.; VINOGRADOVA, I.L.; SKACHILOVA, N.N.; VIKHERT, A.M.; ZAMYSLOVA, K.N., prof.; SOKOLOVSKIY, V.P., prof.; BEYUL, Ye.A., kand.med.nauk; SOLOV'YEV, V.V.

Minutes of the meetings of the Moscow Society of Therapeutists. Terap.arkh. 35 no.1:112-118 Ja'63. (MIRA 16:9)
(THERAPEUTICS--ABSTRACTS)

KALITEYEVSKAYA, T.N. (Moskva, K-9, ul. Gertsena, d.17, kv.5)

Method for tomography in silicosis. Vest. rent. i rad. 36 no.5: 26-30 S-O '61. (MIRA 15:1)

1. Iz rentgenologicheskogo otdeleniya (zav. - prof. K.P.Molokanov) Instituta gigiyeny truda i profzabolevaniy AMN SSSR (dir. - deystvitel'nyy chlen AMN SSSR prof. A.L.Letavet).
(LUNGS--DUST DISEASES) (RADIOGRAPHY)

KALITEYEVSKAYA, V. F.

USSR / Human and Animal Morphology (Normal and Pathological). Blood-Vascular System. Heart. S-5

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79109.

Author : Kaliteyevskaya, V. F.
Inst : Not given.
Title : Morphology of the Development and Healing of an Infarct of the Myocardium.

Orig Pub: Arkhiv patologii, 1957, 19, No 5, 29-37.

Abstract: The macro - and microscopic changes in the heart muscle of 150 patients who died from an infarct of the myocardium are described. Immediately after the infarct, the muscular fibers of the myocardium are subject to necrosis; the focus of the necrosis is infiltrated with polynuclears. The infiltration achieves maximum expression toward the 3-4th day, then decreases, and disappears toward the 16-17th day. To the degree of resorp-

Card 1/3

Pathol.-Anatomical Dept - Inst. im Sklifosovskiy

KALITEYEVSKAYA, V.F.

PREOBRAZHENSKAYA, Yu.N.; KALITEYEVSKAYA, V.F. (Moskva)

Problem of the interrelationship between bone tissue and bone marrow; development of osteomyelopoietic dysplasia in a case of cured parathyroid osteodystrophy [with summary in English]. Arkh.pat. 20 no.4:24-31 '58. (MIRA 11:5)

1. Iz terapevticheskogo i patologoanatomicheskogo otdeleniy Instituta imeni Sklifosovskogo (dir.-zasluzhennyy vrach USSR M.M. Tarasov)
(ANEMIA, APLASTIC, etiology and pathogenesis,
osteomyelopoietic dysplasia caused by osteitis fibrosa (Rus)
(OSTEITIS FIBROSA, compl.
osteomyelopoietic dysplasia (Rus)

KALITEYEVSKAYA, V.F.

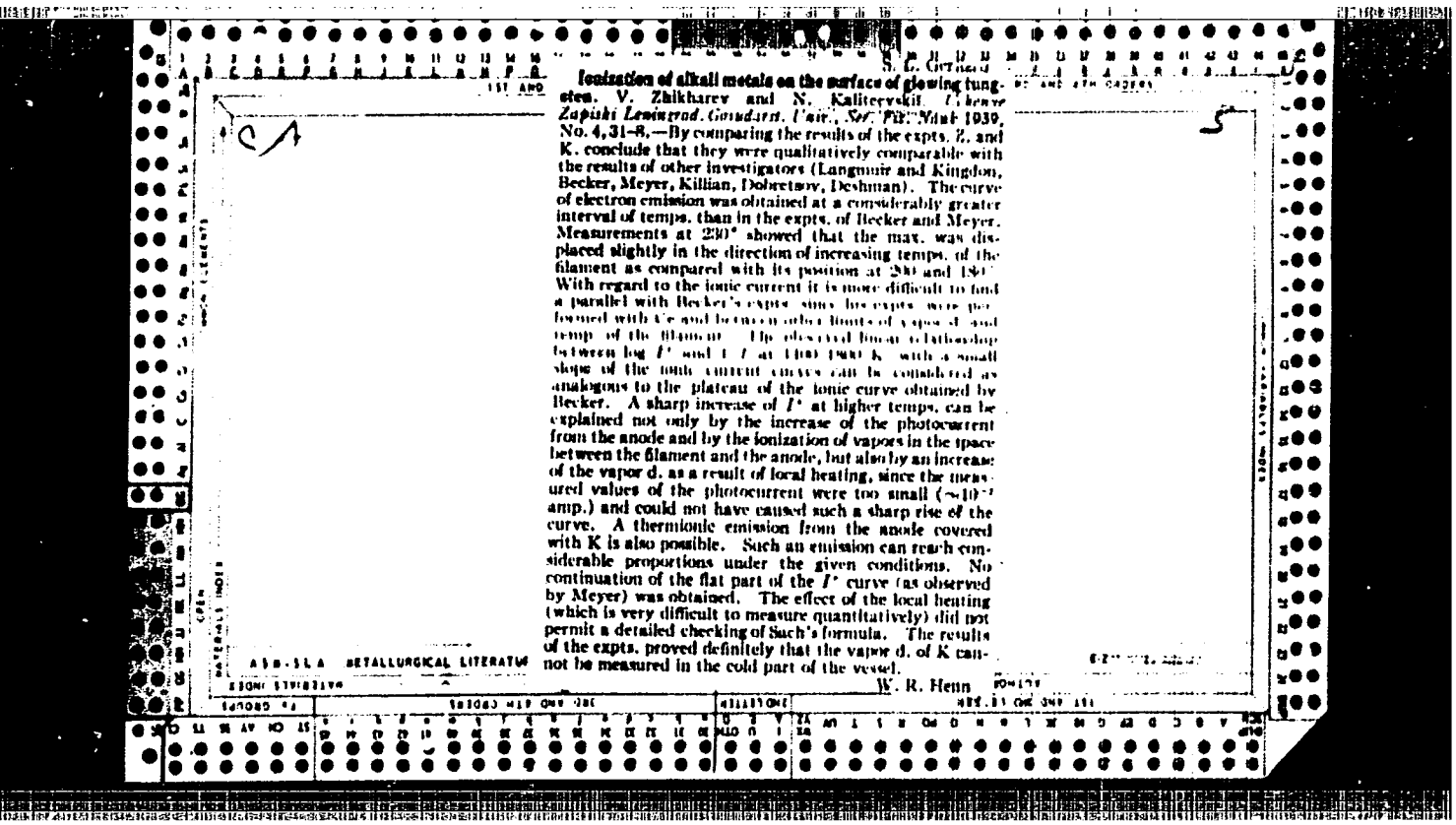
So-called visceral hyperparathyroidosis. Arkh. pat. 21 no.12: 53-58 '59. (MIRA 13:12)

(PARATHYROID GLANDS--DISEASES)

KUSHKIY, R.O., kand. med. nauk; KALITEYEVSKAYA, V.F.

Weber-Christian disease. Ter. arkh. 35 no.4:111-114 Ap'63
(MIRA 17:1)

1. Iz 1-y terapevticheskoy kliniki (rukovoditel' - doktor med. nauk S.G. Moiseyev) i patologoanatomicheskogo otdeleniya (rukovoditel' - doktor med. nauk N.K.Permyakov) Moskovskogo gorodskogo ordena Trudovogo Krasnogo Znameni instituta skoroy pomoshchi imeni N.V. Sklifosovskogo (dir. - zasluzhennyy vrach UkrSSR M.M.Tarasov).



Ionization of alkali metals on the surface of glowing tungsten. V. Zhikharev and N. Kaliteevskii. *Uchenye Zapiski Leningrad. Gosudarst. Univ., Ser. Fiz.-Mat.* 1939, No. 4, 31–8.—By comparing the results of the expts. Z. and K. conclude that they were qualitatively comparable with the results of other investigators (Langmuir and Kingdon, Becker, Meyer, Killian, Dobretsov, Deshman). The curve of electron emission was obtained at a considerably greater interval of temps. than in the expts. of Becker and Meyer. Measurements at 230° showed that the max. was displaced slightly in the direction of increasing temps. of the filament as compared with its position at 230 and 180°. With regard to the ionic current it is more difficult to find a parallel with Becker's expts. since the expts. were performed with Cs and between other limits of vapor d. and temp. of the filament. The observed linear relationship between log I^+ and $1/T$ at 1100–1900° K. with a small slope of the ionic current curves can be considered as analogous to the plateau of the ionic curve obtained by Becker. A sharp increase of I^+ at higher temps. can be explained not only by the increase of the photocurrent from the anode and by the ionization of vapors in the space between the filament and the anode, but also by an increase of the vapor d. as a result of local heating, since the measured values of the photocurrent were too small ($\sim 10^{-7}$ amp.) and could not have caused such a sharp rise of the curve. A thermionic emission from the anode covered with K is also possible. Such an emission can reach considerable proportions under the given conditions. No continuation of the flat part of the I^+ curve (as observed by Meyer) was obtained. The effect of the local heating (which is very difficult to measure quantitatively) did not permit a detailed checking of Such's formula. The results of the expts. proved definitely that the vapor d. of K cannot be measured in the cold part of the vessel.

W. R. Henn

USSR/Physics - Spectral analysis

Card 1/1 Pub. 43 - 47/97

Authors : Vinnichenko, E. N.; Zaydel', A. N.; and Kalitseyevskiy, N. I.

Title : Application of the method of additions in spectral analysis

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, page 272, Mar-Apr 1954

Abstract : It is shown that the method of additions can be successfully applied for increasing the accuracy of analytical determinations even in cases where the analytical lines of the tested element in the spectrum of the basic sample are totally faint. The basic material in the method of additions necessary for the formulation of standards is the analyzed sample divided into smaller parts into each of which is introduced a known addition of a specific element. The basic concentration of the added element is determined by extrapolation of intensities or blackenings measured in the spectra of the samples.

Institution : The A. A. Zhdanov State University, Physics Institute, Leningrad

Submitted : .....

Kaliteyevskiy, N.I

USSR/Optics - Spectroscopy K-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12996

Author : Kaliteyevskiy, N.I., Chayka, M.P.
Inst :
Title : Investigation of the Hyperfine Structure of Spectra of Plutonium and Uranium Isotopes.

Orig Pub : Vestn. Leningr. un-ta, 1955, 10 No 11, 121-137

Abstract : See Referat Zhur Fizika, 1956, 17953.

Card 1/1

USSR/Optics - Optical Methods of Analysis. Instruments, K-7

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35875

Abstract: current from a step-down transformer. The layer of admixtures on the surface of the electrode is then analyzed by ordinary methods of spectral analysis. The sensitivity of the method is quite high and reaches values of approximately 10^{-5}% in the determination of the majority of volatile admixtures. The average squared error of a single determination is 10-20%. It depends on the element to be determined, on its concentration, and on the properties of the substance that is being analyzed. The analysis error can be reduced by rational choice of the internal standard. A discussion is made of the investigation of the fundamentals of the method of spectroscopic method and with the aid of radioactive tracers and of its application to the analysis of pure aluminum oxide.

Card 2/2

KALITEYEVSKIY, N.I.

USSR/ Physics - Super fine structure

Card 1/1 Pub. 22 - 13/46

Authors : Kaliteevskiy, N. I., and Chayka, M. P.

Title : Study of the super fine structure of the spectra of plutonium and the isotopes of uranium

Periodical : Dok. AN SSSR 103/1, 49-51, Jul 1, 1955

Abstract : A study of the fine structure of spectra of plutonium and the isotopes of uranium is described. The study was accomplished with the help of a Fabry-Perot interferometer of a very high resolving power coupled with a glass double prism spectrograph or a spectrograph with a flat diffractional grate. Six references: 2 USA, 2 Brit. and 2 Germ. (1946-1954).

Institution : Leningrad State University imeni A. A. Zhdanov

Presented by: Academician A. A. Lebedev, April 16, 1955

USSR/ Physical Chemistry - Atom B-3

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10823

Author : Kalitiyevskiy N.I., Chayka M.P.
Title : Spectroscopic Determination of Nuclear Moments of Cu^{63} and Cu^{65}.

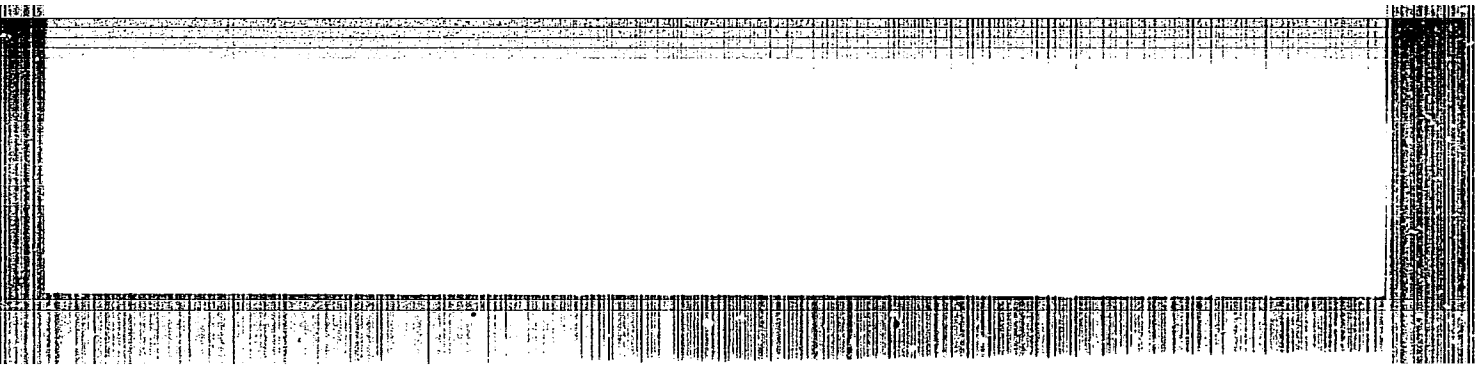
Orig Pub : Optika i spektroskopiya, 1956, 1, No 5, 606-611

Abstract : By means of a Fabry - Perot interferometer an investigation was made of hyperfine structure of lines 5700 and 5782 A in spectra of separated isotopes of copper (Cu^{63} and Cu^{65}). Structure of $3d^9 4s^2\ ^2D$ term was studied. From hyperfine splitting of this term were calculated the values of constants of magnetic (A) and quadrupole (B) interaction; $A(Cu^{63}) = 64.4 \times 10^{-3}$, $A(Cu^{65}) = 65.7 \times 10^{-3}$, $B(Cu^{63}) = 0.30 \times 10^{-3}$ and $B(Cu^{65}) = 0.23 \times 10^{-3}$ cm^{-1}. Magnitude of quadrupole moment Q of nucleus was calculated according to the formula $Q = -8BI(2I-1)\ J\ (2J-1)/3e^2 \langle r^{-3} \rangle \langle 3\cos^2\theta - 1$, wherein for $\langle 3\cos^2\theta - 1$ was taken the value 2/5, that was previously calculated (Schueler, Schmidt, Z. Phus., 1936, 100, 113). The authors evaluated $\langle r^{-3} \rangle$ according to the formula $A = [\ 2((\rho+1)/J(J+1)I]\mu_0 \mu \langle r^{-3} \rangle$, and value of magnetic moment μ of corresponding nucleus was taken from the

Card 1/2

Sci. Res. Phys. Inst., Leningrad State Univ.

Card 2/2



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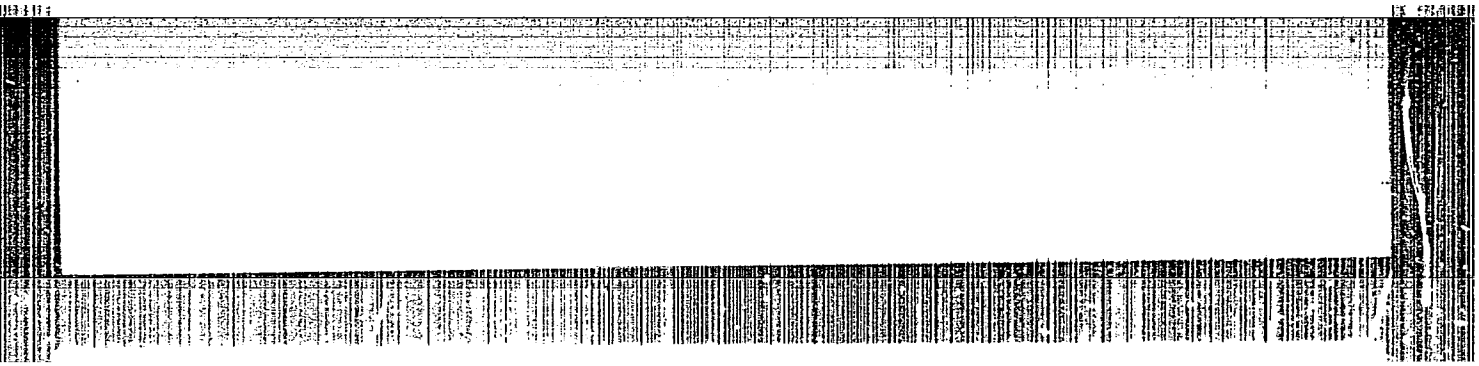

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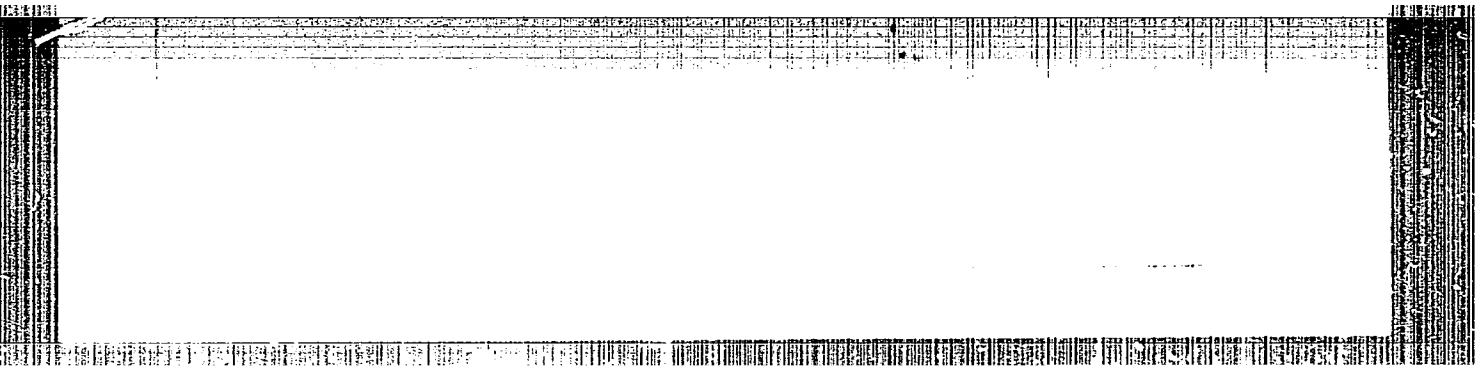

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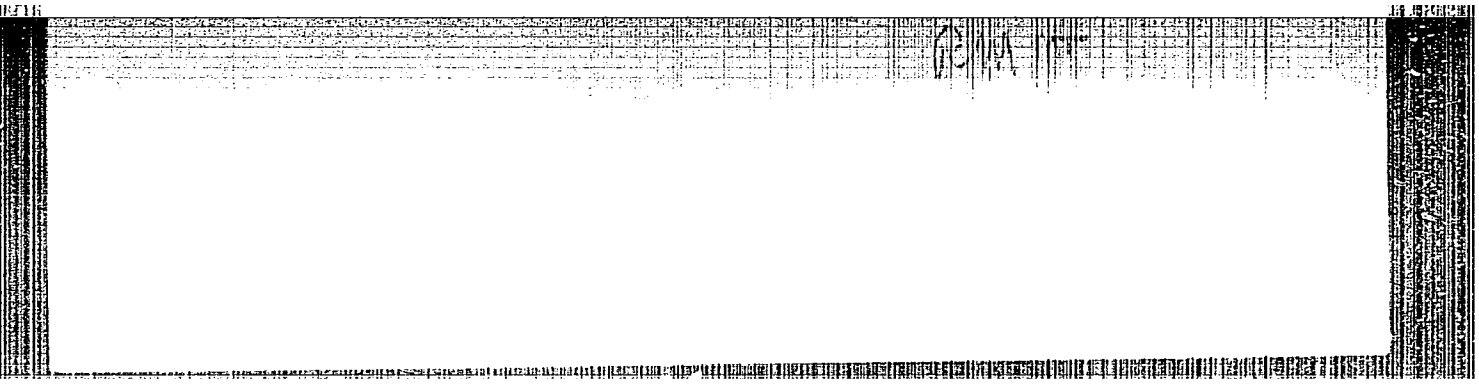

APPROVED FOR RELEASE: 08/10/2001 CIA-RDP86-00513R000620120010-9"

51-1-3/18

AUTHORS: Zaydel', A. N., Kalitseyevskiy, N. I., Lipis, L. V. and Tarakanov, V. M.

TITLE: Spectral Analysis by the Evaporation Method. V. Analysis of Plutonium by the Method of Evaporation in Vacuum. (Spektral'nyy analiz po metodu ispareniya. V. Analiz plutoniya metodom ispareniya v vakuume)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr.1, pp.16-20. (USSR)

ABSTRACT: Refs. 1-3 describe spectral analysis using the evaporation method. This method is applied here to plutonium which presents particular difficulties because of its chemical toxicity, -activity and absence of data on its physical properties. A technique was developed using thorium, lanthanum and uranium in place of plutonium. First the general character of the spectrum was investigated. A sample of plutonium was obtained by depositing a drop of $PuCl_4$ on a copper electrode. This drop was slowly evaporated to form a layer of plutonium oxychloride. This electrode was then placed in a chamber with four quartz windows (Fig.1). This arrangement permitted recording of

Card 1/3 spark and arc spectra by four

51-1-3/18

Spectral Analysis by the Evaporation Method. V. Analysis of Plutonium by the Method of Evaporation in Vacuum.

of other metals (Th, U, Zr, Be). In some cases only 1-2 μg of Pu were necessary. No numerical results of Pu analysis are given in this paper. The authors thank M. P. Chayka, G. I. Zhuravlev, T. G. Fedorov and L. I. Averbakh who took part in some of this work. There are 2 figures, 1 table and 9 references, 6 of which are Slavic.

SUBMITTED: February 5, 1957.

AVAILABLE:

Card 3/3

USSR/Soil Science - Physical and Chemical Properties

Abs Jour : Ref Zhur Biol., No 19, 1958, 86767

Author : Zaydel', A.N., Kalitcyevskiy, N.I., Razumovskiy, A.N.

Inst : Leningrad University.

Title : Determination of the Content of Certain Rare-Earth Elements in Soils.

Orig Pub : V.sb.: Primeneniye metodov spektroskopii v prom-sti prodovol'stvennykh tovarov i s.kh., L., LGU, 1957, 29-35. Diskus. 35-38

Abstract : A method of determining the content of La, Nd, Gd, Eu, Sm in soils, based on chemical concentration and subsequent spectral analysis of soil specimens. The procedure is described in chemical concentration of soil specimens with the indicated elements. As carrier and internal standard 100 to 200 mg. La are introduced in the test sample.

Card 1/2

Spectroscopic Analysis of Small Actinium Samples. 89-12-12/29

1o 2856,2	2	28	313o,5	2	46	3481,o	1o
11 2895,2	3	29	3153,2	8	47	3489,5	8
12 2896,7	5	3o	3154,5	9	48	3539,5	4
13 2952m9	1o	31	3164	8	49	3555,o	5
14 2994,3	1o	32	3171,3	3	5o	3565,5	1o
15 3co1,8	2	33	3176,8	2	51	3756,6	6
16 3o19,5	7	34	32o2,1	2	52	3885,5	5
17 3o43,4	1o	35	32o4,9	3	53	3915,1	4
18,3o69,4	7	36	3219,3	4	54	4o34,5	4

There are 6 references, 5 of which are Slavic.

SUBMITTED: February 16, 1957

AVAILABLE: Library of Congress

Card 2/2

5(2)

PHASE I BOOK EXPLOITATION SOV/1727

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Extraction, Analysis and Application) Moscow, Izd-vo AN SSSR, 1958. 331 p. 2,200 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, I. N. Zaozerskiy, Doctor of Chemical Sciences, R. V. Koglyarov, Candidate of Technical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences; Eds. of Publishing House: D. N. Trifonov and T. O. Levi; Tech. Ed.: S. G. Markovich.

PURPOSE: This book is intended for scientists, chemists, teachers and students of higher educational institutions, chemical and industrial engineers, and other persons concerned with the extraction, preparation, use, or study of rare earth elements.

COVERAGE: This collection contains reports presented at the June 1956 Conference on Rare Earth Elements at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences USSR. The articles treat chemical methods of separating rare earth mixtures, methods of processing rare earth ores, ion exchange chromatography, chemical analysis, and some industrial applications of rare earths. Aside from contributing authors, the editors mention the following Soviet scientists, who are studying rare earth elements, rare earth deposits, extraction methods, and the preparation of oxides and salts: Martynov, Mel'nikov, Khrushchev, Malikov, Pisarzhevskiy, Chernyak, Tanatar, Belousov, Zhukov and especially, N. A. Orlov, who first obtained the majority of rare earth elements in the pure state, separated many complex molecular compounds of these elements, and determined their specific properties. References are given at the end of each article.

TABLE OF CONTENTS:

Rare Earth Elements; ...

Raydel', A.N., N.I. Kaliteyevskiy, and A.N. Razumovskiy (Leningradskiy gosudarstvennyy universitet, Nauchno-issledovatel'skiy fizicheskiy institut - Leningrad State University, Scientific Research Institute for Physics). Spectrochemical Determination of Gd, Eu, and Sm in Atomic Materials. Part I. Principle of the Method and Its Application in the Analysis of Beryllium 239

Raydel', A.N., N.I. Kaliteyevskiy, A.N. Razumovskiy, and P.P. Yakimova (Leningrad State University, Scientific Research Institute for Physics). Spectrochemical Determination of Gd, Eu, and Sm in Atomic Materials. Part II. Analysis of Thorium and Uranium 251

Raydel', A.N., and A.A. Lipovskiy (Leningrad State University, Scientific Research Institute for Physics). Spectrochemical Determination of Gd, Eu, and Sm in Atomic Materials. Part III. Analysis of Zirconium and Bismuth in Gd 259

Grishina, T.I. (Moscow State University imeni M.V. Lomonosov). Determination of Small Admixtures of Rare Earths in High-Purity Rare Earth Preparations by Spectral Emission Analysis 266

Card 9/11

SOV/81-59-21-73780

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 21, p 7 (USSR)

AUTHORS: Kaliteyevskiy, N.I., Chayka, M.P.

TITLE: The Ratio of Magnetic and Quadruple Moments of U^{233} and U^{235} Nuclei

PERIODICAL: Fiz. sb. L'vovsk. un-t, 1958, Nr 4(9), pp 12 - 14

ABSTRACT: In continuation of the work published earlier (RZhKhim, 1957, Nr 16, 53621) spectroscopic evaluations have been made of the ratio of the magnetic moments of U^{232} and U^{235} under the assumption that the spin of both uranium isotopes is equal to 7/2. The ratio of the magnetic moments is equal to 1.6 $\pm$0.1A and that of the quadrupole moments to 0.8 $\pm$ 0.3.

S. Shushurin

Card 1/1 1. Fizicheskiy institut Leningradskogo ordena Lenina gosudarstvennogo universiteta imeni A.A. Zhdanova. (Uranium - Isotopes) (Nuclear moments)

(MLRA 12:5)

KALITEYEVSKIY, N.I.; CHAYKA, M.P.

Spectroscopic determination of nuclear moments of Cu^{63} and Cu^{65}. Fiz.sbor. no.4:21-24 '58. (MIRA 12:5)

1. Leningradskiy ordena Lenina gosudarstvennyy universitet imeni A.A.Zhdanova.
(Copper--Isotopes) (Nuclear moments)

ZAYDEL', A.N.; KALITEYEVSKIY, N.I.; KUND, G.G.; FRATKIN, Z.G.

Function of carriers in the spectrum analysis of materials of low volatility. Fiz.sbor. no.4:29-30 '58. (MIRA 12:5)

1. Fizicheskiy institut Leningradskogo ordena Lenina gosudarstvennogo universiteta imeni A.A.Zhdanova.
(Uranium compounds--Spectra)

ZAYDEL', A.N.; KALITEYEVSKIY, N.I.; LIPIS, L.V.; CHAYKA, M.P.

Spectrum analysis of thorium and beryllium by the vacuum evaporation method. Fiz.sbor. no.4:31-32 '58. (MIRA 12:5)

1. Fizicheskiy institut Leningradskogo ordena Lenina gosudarstvennogo universiteta imeni A.A.Zhdanova.
(Thorium--Spectra) (Beryllium--Spectra)

ZAYDEL', A.N.; KALITEYEVSKIY, N.I.; LIPOVSKIY, A.A.; RAZUMOVSKIY, A.N.; YAKIMOVA, P.P.

Spectrochemical determination of Gd, Eu, and Sm in metals. Fiz.sbor. no.4:37-40 '58. (MIRA 12:5)

1. Fizicheskiy institut Leningradskogo ordena Lenina gosudarstvennogo universiteta imeni A.A.Zhdanova.
(Gadolinium--Spectra) (Europium--Spectra) (Samarium--Spectra)

51-4-2-28/2

AUTHORS: Kaliteyevskiy, N., Neporent, B. and Feofilov, P.

TITLE: XI-th Conference on Spectroscopy. (XI soveshchaniye po spektroskopii.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.2, pp.282-284 (USSR)

ABSTRACT: XI-th Conference on Spectroscopy, organized by the Spectroscopy Commission of the Academy of Sciences of the USSR, was held in Moscow on 2-10 December, 1957. This Conference was limited to the problems of physics of atomic and molecular spectra and to spectroscopy of solid bodies including luminescence methods. 600 delegates from 36 Soviet towns took part in the Conference, as well as 12 foreign visitors from 8 countries. The Conference was opened by S.L. Mandel'shtam and a review lecture of S.E. Frish, "Soviet Spectroscopy in the Last 40 Years" was heard. In 7 plenary and 12 sectional sessions about 130 papers were read. Over 30 papers were on atomic spectroscopy, about 60 dealt with molecular spectra and the remainder were concerned with the spectroscopy of solid bodies. A more detailed report of this Conference will be

Card 1/3

published in "Uspekhi Fizicheskikh Nauk". In atomic spectroscopy the papers dealt with four main problems: (1) calculation of energy levels of atoms and determination of atomic constants, (2) interaction of the nucleus with the electron envelope, (3) spectroscopy of gaseous discharges, (4) spectroscopic methods of determination of temperature. The largest number of papers presented at the Conference dealt with molecular spectra. The subjects reported on included electron and vibrational spectra, Raman spectra, rotational spectra and Rayleigh scattering of light as well as dispersion in organic substances. Papers on crystal spectroscopy dealt with the following problems: (1) spectroscopy of molecular crystals, (2) spectroscopic detection of excitons, (3) spectroscopy of ionic crystals containing activating centres, (4) spectroscopy of colour centres in ionic crystals. Papers on spectroscopic instruments were also read at the Conference. In spite of limitation of the subjects dealt with at the Conference, the sessions were overloaded and further limitation of the subject is suggested for the next conference. The

XI-th Conference on Spectroscopy.

general conclusions are that the spectroscopic theory has reached a higher stage of development. Further advances were made in the infrared spectroscopy as well as in radio-spectroscopy. Spectroscopic investigations of gaseous discharges and the work on Raman scattering were well represented. The number of papers on spectroscopy of solids had increased and the technique of spectroscopic studies has improved.

1. Conferences-Spectroscopy-Moscow 2. Spectroscopy-USSR

Card 3/3

KALITEYEVSKIY, N.I.

75-1-19/26

AUTHORS: Bufatin, O. I., Zaydel', A. N., Kaliteyevskiy, N. I.

TITLE: The Spectrochemical Determination of Platinum and Palladium in Uranium (Spektrokhimicheskoye opredeleniye platiny i palladiya v urane)

PERIODICAL: Zhurnal Analiticheskoy Khimii, 1958, Vol 13, Nr 1, pp 116-118 (USSR)

ABSTRACT: In the determination of small quantities of elements of the platinum group in uranium the usual methods of spectral analysis do not lead to success. Therefore a concentration of the elements to be determined must be brought about by chemical methods. According to several authors noble metals are separated from ores by crucible melting with lead. In the analysis of fairly pure samples of uranium, however, this task can be solved much more simply by precipitation of the elements of the platinum group with hydrogen sulfide as sulfides. On that occasion practically all uranium remains in solution. In order to attain a sensitivity of the analysis of about 10^{-4} %, copper was taken as carrier, which possess a good

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The Spectrochemical Determination of Platinum and Palladium in Uranium

collecting action for platinum sulfide. The precipitation took place in a hot 2n-sulfuric solution which contained 0,1 mg Cu on 1g uranium. The sulfides were dissolved in aqua regia and brought onto the surface of a carbon electrode moistened with a solution of polystyrene in benzene. The completeness of the precipitation of platinum and palladium was spectroscopically proved. In the spectroscopic determination of Pt and Pd in artificial mixtures (10^{-4} - 10^{-2} % Pt and Pd in uranium) a rectilinear dependence of the blackening of the lines of analysis on the logarithm of the concentration of the element to be determined exists. This simple method of the joint precipitation of the sulfides of platinum and palladium with copper sulfide permits a practically complete separation of uranium. In the spectrum of the concentrate no lines of uranium could be proved any long. The spectrum poor in lines of copper does not hinder the spectroscopic determination of platinum and palladium. (Technical data of the apparatus used are then given). For the calibration of the spectrum, copper proved to be useless as reference element, as it falsifies the results of the determination of platinum and palla-

The Spectrochemical Determination of Platinum and Palladium in Uranium

dium in uranium samples which are polluted with copper. As another suitable element which is quantitatively precipitated together with copper as sulfide was difficult to find, the standard element was not added to the initial sample, but to the concentrate after the concentration. Gold (0,01 % $AuCl_3$--solution) was taken in a quantity that 2 μ g metallic gold were deposited on the electrode. The lines of analysis of platinum were at 2659,45 Å, and 3421,24 Å respectively, the corresponding reference lines of gold at 2675,95 Å and 3122,78 Å respectively. The somewhat great distance in the wave lengths of the used lines of platinum and palladium plays a minor part, as the accuracy in the determination of such small quantities is comparatively low. This method of calibration diminishes the errors which occur in photographing the spectrum and simplifies the performance of the analysis. Series tests showed that the uncontrollable errors originating from the precipitation of the sulfides are very few. The total error of a determination at concentrations of platinum in uranium of about 10^{-4} % lay below 20 %. It is composed of errors in concentration, of calibration errors and

The Spectrochemical Determination of Platinum and Palladium in Uranium

errors in the spectral analysis of the concentrate. By means of the calibration lines platinum in uranium can be identified with a sensitivity of 10^{-4} % and palladium with a sensitivity of 3.10^{-5} %. This method can also be employed for the determination of platinum and palladium on other materials. The most important conditions for applicability is that the chief component of the sample is not precipitable with hydrogen sulfide in a sulfuric solution. Especially the possibility of application for the determination of platinum in a mixture of the rare earth metals was examined. On the introduction of hydrogen sulfide into a solution of the sulfates of the rare earth metals the latter remain in the solution, whereas platinum is precipitated together with the carrier (copper). The sensitivity of the determination is somewhat lower than in the determination of platinum in uranium, as the low solubility of the sulfates of the rare earth metals requires smaller weighed portions of the samples for the analysis. The corresponding experiments were performed by G. G. Kund and P. P. Yakimovoy. There are 1 figure, 1 table, and 3 references, 1 of which is Slavic.

Card 4/5

75-1-19/26

The Spectrochemical Determination of Platinum and Palladium in Uranium

ASSOCIATION: Leningrad State University imeni A. A. Zhdanov
(Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova)

SUBMITTED: February 7, 1957

AVAILABLE: Library of Congress

1. Platinum - Determination 2. Palladium - Determination 3. Uranium - Spectrographic analysis

Card 5/5

AUTHORS: ~~Kaliteyevskiy, N. I.,~~ Lipovskiy, A. A., 75-13-3-24/27
Razumovskiy, A. N., Yakimova, P. P.

TITLE: Spectroscopic Analysis by Means of Evaporation
(Spektral'nyy analiz metodom isparennya).
Communication 6. The Determination of Cadmium, Germanium, Indium, Gallium, Gold, Antimony and Lead in Pitchblende
(Soobshcheniye 6. Opredeleniye kadmiya, germaniya, indiya, galliya, zolota, sur'my i svintsa v zakisi-okisi urana)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, 372-373
pp. 372-373 (USSR)

ABSTRACT: The principles for methods of evaporation were published in earlier papers (References 1-3). The possibility was also shown to determine admixtures of other elements in the difficultly volatile oxides U_3O_8, Al_2O_3, ThO_2, BeO_2 in this manner. The main condition for the efficiency of an evaporation method is a sufficiently high difference in the liquids among the admixtures to be determined and the chief component. In the present paper an evapora-

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tion method for the determination of a number of liquid elements (Cd, In, Ge, Ga, Au, Sb, Pb) in pitchblende is worked out. Experimental data on the evaporation of the admixtures were already described earlier (Reference 1). The evaporation is performed at the air, as on heating in a vacuum a decomposition of U_3O_8 under formation of the more easily volatile UO_3 takes place. In the determination of $\sim 3.10^{-5}\%$ cadmium and indium difficulties arose. At 1600-1700°C an intensive evaporation of CdO occurs, but it is not complete, as cadmium is anew deposited at the electrode on a temperature rise to 1900-2000°C. For avoiding a systematic error the evaporation must therefore by all means be performed at $\sim$2000°C. This temperature is also sufficient for completely expelling all oxides of all other elements to be determined (In, Ge, Ga, Au, Sb, Pb) and is not high enough to cause a marked evaporation of U_3O_8. For the determination of

Spectroscopic Analysis by Means of Evaporation. 75-13-3-24/27
Communication 6. The Determination of Cadmium, Germanium, Indium, Gallium, Gold, Antimony and Lead in Pitchblende

Cd, In and Sb weighed portions of 200 mg U_3O_8 had to be made.
When dividing this amount into four portions and four times evaporating the admixtures at the same electrode a more intensive blackening of the respective spectral lines occurs than in works with the total amount. The division therefore increases the sensitivity, but considerably retards the analysis. The technical data of the spectroscopic analysis of the sublimates are given in the paper. As the sensitive lines of the elements to be determined lie in different parts of the spectrum it is expedient, simultaneously to photograph the spectrum on 2 spectrographs (ISP -22 or Q-24 and ISP -51). For the line In I (4511,3 Å) silver electrodes were used, as on copper electrodes this line of indium is overlapped by the intensive line Cu 4509,4 Å. For recording the line Cd II (2265 Å) which lies in the distant ultraviolet special photographic plates ("spektral'nyye", type III) were used. The

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Spectroscopic Analysis by Means of Evaporation.. Communication 6. The Determination of Cadmium, Germanium, Indium, Gallium, Gold, Antimony and Lead in Pitchblende

75-13-3-24/27

mean quadratic error of an individual determination of one of the above-mentioned elements does not exceed 15-20%. The analytical lines of the individual elements used for the determinations and the different sensitivities are given. A. N. Zaydel' gave valuable advice, G. G. Kuid performed the control experiments.
There are 1 figure, 1 table, and 3 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: February 7, 1957

1. Evaporation--Applications 2. Pitchblende--Spectrographic analysis

Card 4/4

AUTHORS: Kaliteyevskiy, N. I., Perel', V. I., Chayka, M. P. SOV/48-22-6-14/28

TITLE: On the Accuracy of the Determination of Constants of the Hyperfine Structure From Optical Measurements (O tochnosti opredeleniya konstant sverkhtonkoy struktury iz opticheskikh izmereniy)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 6, pp. 692-695 (USSR)

ABSTRACT: In the introduction it is pointed out that this problem has not found the attention it deserves in publications in spite of its great importance which is due to the fact that knowledge of the constants of hyperfine structure makes it possible, without quantum-mechanical calculation to determine important nuclear constants as e.g. the relation of the magnetic- and quadrupole moments of two isotopes of an element. The theories relating to this problem are discussed (Refs 1-8). In this connection it was found that the results obtained for the constants of hyperfine structure obtained by various methods show satisfactory agreement with respect to magnetic nuclear moments, but that, with respect to quadrupole moments these values (B) differ by up to the

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On the Accuracy of the Determination of Constants of the Hyperfine Structure From Optical Measurements

SOV/48-22-6-14/28

1,5-fold. Therefore the conclusion is drawn that the accuracy of optical measurements when determining moments of higher order (e.g. octupoles) are unreliable. By way of an example it is mentioned that the value computed in this paper for A_3 for the term $^2D_{3/2}$ for copper apparently does not represent octupole interaction but must be considered to be caused by systematic errors in measuring the position of sublevels of hyperfine structures. There are 1 table and 9 references, 3 of which are Soviet.

ASSOCIATION: Fizicheskiy institut Leningradskogo gos. universiteta im. A. A. Zhdanova (Institute of Physics, Leningrad State University imeni A. A. Zhdanov)

1. Materials--Structural analysis 2. Materials--Optical analysis
3. Structural analysis--Effectiveness

Card 2/2

53-65-1-6-/10

AUTHORS: Kaliteyevskiy, N., Neporent, B., Feofilov, P.

TITLE: Transaction of the XI. Congress on Spectroscopy (XI Soveshchaniye po spektroskopii) I. Atomic Spectroscopy (I. Atomnaya spektroskopiya)

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol. 65, Nr 1, pp. 141-145 (USSR)

ABSTRACT: The XI. Congress on Spectroscopy was held at Moscow from December 2 - 1o, 1957. The program was devoted to physical problems of atomic and molecular spectra and to the spectra of solids. The congress was attended by 6oo delegates from 36 cities of the USSR, as well as by 12 foreign scientists from Great Britain, Eastern and Western Germany, China, Roumania, the USA, France and Yugoslavia. (The X. Congress on Spectroscopy held at L'vov in 1956 was attended by about 15oo delegates who delivered 3oo lectures). The XI. congress was arranged in 7 plenary meetings and 12 sectional meetings, in the course of which more than 125 lectures were held, 3o of them dealing with atomic spectroscopy, about 6o with molecular spectroscopy and the remainder with the spectroscopy

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Transaction of the XI. Congress on Spectroscopy. I. Atomic Spectroscopy

of solids. S. L. Mandel'shtam opened the congress. S. E. Frish held the opening lecture: "40 years of Soviet Spectroscopy", and the participants honored the memory of the deceased Member of the Academy G. S. Landsberg. The theoretical and the experimental lectures concerning atomic spectroscopy dealt with 4 basic problems: The computation of the energy levels of the atoms and the determination of the atomic constants, the interaction between the nucleus and the shell, gas discharge spectroscopy, and finally to the spectroscopical methods of temperature determination. The following scientists lectured or took part in the discussion: Yu. N. Demkov (computation of the energy of the He-atom in its ground state). M. G. Veselov, I. B. Bersuker, A. P. Yutsis and coworkers, L. A. Vaynshteyn, N. P. Penkin, Yu. I. Ostrovskiy, L. N. Shabanov (spectra of atoms with a filled 3d-shell), A. M. Shukhtin, V. S. Yegorov (application of the "crotch-method" (met. kryukov) by Rozhdestvenskiy for the investigation of fast varying processes, e.g. pulsed discharges), Yu. P. Dontsov (investigation of about 60 lines of Zr I and Zr II) N. G. Morozova, G. P. Startsev, A. R. Striganov (U I, U II spectra), M. S. Frim, N. I. Kaliteyevskiy,

53-65-1-6/10

Transaction of the XI. Congress on Spectroscopy. I. Atomic Spectroscopy

V. I. Perel', I. M. P. Chayka (magnetic and quadrupole-interaction between nucleus and shell), N. R. Batarchukova, G. F. Drukarev, V. I. Ochkur (determination of the exciting function for H-atoms at low impact energies), G. G. Dolgov, S. E. Frish, I. P. Bogdanova (excitation of spectral lines in the range of the negative glow), V. A. Fabrikant, Yu. M. Kagan, M. A. Mazing, S. L. Mandel'shtam (spectral line broadening), V. I. Kogan, Lokhte-Khol'tgreven (Western Germany), R. Ritchle (Eastern Germany), I. V. Dvornikova, N. N. Sobolev, Bartel's (Western Germany), A. L. Labuda, Ye. G. Martinkov and I. G. Nekrashevich. Finally M. Z. Kho_khlov, L. V. Leskov and L. P. Vasil'yeva reviewed the problem of the determination of the discharge temperature according to molecular spectra.

1. Neutron spectroscopy--USSR

Card 3/3

53-65-1-7/10

AUTHORS: Kaliteyevskiy, N., Neporent, B., Feofilov, P.

TITLE: Transactions of the XI. Congress on Spectroscopy (XI. Soveshchaniye po spektroskopii) II. Molecular Spectroscopy (II Molekulyarnaya spektroskopiya) First Part

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol. 65, Nr 1, pp. 145-151 (USSR)

ABSTRACT: This congress was held at Moscow from December 2 - 10, 1957. The lectures on molecular spectroscopy dealt with the application of these spectra to various scientific and technical problems as well as to the suitability of the spectra for special problems. The lectures dealt with the electron spectra, vibration spectra and rotational spectra in the mentioned order. L. A. Borovinskiy and M. N. Adamov, M. G. Veselov and T. K. Rebane spoke about theoretical problems of electron spectra, the latter in particular dealing with the computation of the electric and magnetic properties of molecules according to the metal model. B. I. Stepanov and L. P. Kazachenko spoke about the agreement between the absorption- and lumi-

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Transactions of the XI. Congress on Spectroscopy. II. Molecular Spectroscopy. First Part

nescence-ranges in compound molecules; B. S. Neporent and H. G. Bakhshiyev, as well as M. D. Galanin and Z. A. Chizhikova dealt with intensity problems. A. I. Nikitina, M. D. Galanin, G. S. Ter-Sarkisyan spoke about the connections between optical characteristics and molecule structure, B. M. Mikhaylov, V. V. Zelinskiy, V. P. Kolobkov and I. I. Reznikova dealt with the fluorescence and the phosphorescence of frozen solutions. L. V. Gurvich and I. V. Veyn dealt with the study of the equilibrium in flames for the determination of the dissociation energy of diatomic oxides of the elements of the III. group and V. I. Dianov-Klokov spoke about the absorption spectrum of liquid oxygen in the temperature range of from 77 - 153°K. V. L. Levshin and Ye. G. Baranova lectured on concentration extinguishing (kontsentratsionnoy tusheniye) in solutions. B. Ya. Sveshnikov, V. I. Shirokov, L. A. Kuznetsova and P. I. Kudryashov spoke about the kinetics of fluorescence extinction, and B. S. Neporent about new investigations of the effect of light gases on the absorption spectra of vapors and V. P. Klochkov about the long-distance interaction of aromatic molecules in gases. A. V. Karyakin

Transactions of the XI. Congress on Spectroscopy. II. Molecular Spectroscopy. First Part

and A. V. Shablya dealt with the fluorescence extinction of adsorbates. V. M. Gryaznov, V. D. Yagodovskiy and V. I. Shimulis gave a report on the spectroscopical investigation of the catalytic transformation on metal films sublimated in a vacuum. V. I. Danilova, V. D. Gol'tsev and N. A. Prilezhayeva lectured on the spectral investigation of internal- and intramolecular interaction in simple benzene derivatives, and M. U. Belyy and K. F. Gudymenko spoke about the influence of various anions and cations on the luminescence of lead salts. A. A. Kalyubin lectured on the emission spectra of carbon and of the alcohols of the aliphatic series in an electrodeless discharge. I. V. Obreimov and I. Ya. Kachkurova reported on possibilities for the representation of electron spectra of molecules. Among the lectures dealing with vibration spectra, that delivered by I. I. Sobel'man was about the quantum mechanical theory of line intensity; M. M. Sushchinskiy spoke about the results obtained by the experimental and theoretical investigation

Transactions of the XI. Congress on Spectroscopy. II. Molecular Spectroscopy. First Part

of vibration spectra within the range of valence oscillations of CH for some hydrocarbons. M. M. Sushchinskiy and V. D. Bogdanov reported on the computation of the resonance interaction of totally symmetric valence- and deformation oscillations of the CH-group for normal hydrocarbons.

1. Molecular spectroscopy--USSR

KALITEYEVSKIY, N. I.

5(2) PHASE I BOOK EXPLOITATION SOV/2402

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Production, Analysis, and Use) Moscow, Izd-vo AN SSSR, 1959. 331 p. 5,000 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Eds. of Publishing House: D. N. Trifonov and T.G. Levi; Tech. Ed.: S. G. Markovich; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, I. V. Tananayev, Doctor of Chemical Sciences, R. V. Kotlyarov, Candidate of Chemical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences.

PURPOSE: This book is intended for chemists in general and for geochemists and analytical chemists in particular.

COVERAGE: This collection of articles consists of reports presented at the Rare Earth Elements Symposium held in June 1956 at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy. The book may be divided into three sections: the characteristics, uses and production of rare earth elements (REE); the methods of analyzing REE; and the application of individual rare earth elements and REE mixtures in the glass and metallurgical industries, and their use as catalysts. Considerable space is devoted to the application of ion-exchange chromatography in the production of pure forms of all rare earth elements. The combinations of this method with other methods in separating REE on an industrial scale are discussed by D. I. Ryabchikov, Yu. S. Sklyarenko, and M. M. Senyavin. Chemical methods of separating REE compounds are discussed by I. V. Tananayev (who is said to be the first in the USSR to develop methods of processing REE), V. P. Kotlyarov, L. F. Antonova, A. V. Nikolayev, and G. P. Aleksandrov. Quantitative X-ray spectral analytical methods are described by E. Ye. Vaynshteyn, and chemical methods of analysis by I. P. Alimarin and F. I. Pavlotskaya. The determinations of REE impurities in pure products and atomic materials are discussed at length in three articles by A. N. Zaydel' and his associates. All articles are accompanied by photographs, diagrams, tables, and bibliographic references.

Polyaktov, N.S., and N.P. Nikonova. Fluorescent Determination of Small Quantities of Europium 208

Pomazyuk, V. L., and R. A. Yaroshevich. On the Problem of an Accelerated Method of Determining REE Content of Ferric Oxide in a KL-20 Preparation 214

Vaynshteyn, E. Ye., I. P. Shtekberg, and A. Z. Mogal'skiy. The Process of Applying the X-Ray Spectral Method of Analysis in Controlling Technological Processes in Producing Individual Rare Earth Elements 217

Zaydel', A. N., N. I. Kaliteyevskiy, and A. V. Razumovskiy. Spectrochemical Determination of Sm, Eu, and Gd in Atomic Materials. Communication I. Principle of the Method and Its Application to the Analysis of Beryllium 239

Zaydel', A. N., N. I. Kaliteyevskiy, A. V. Razumovskiy, and P. P. Yakimova. Spectrochemical Determination of Sm, Eu, and Gd in Atomic Materials. Communication II. Analysis of Thorium and Uranium 251

24(7)

AUTHORS: Kaliteyevskiy, N. I., Chayka, M. P. SOV/54-59-3-10/21

TITLE: Photoelectric Measurement of the Relative Intensities of the Hyperfine Structural Components With the Problem of Spin Determination of the Lu^{176} Nucleus

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1959, Nr 3, pp 51-60 (USSR)

ABSTRACT: In the present paper the hyperfine structure of Lu^{176} is investigated and herefrom the nuclear spin is determined. It was found that for obtaining sufficiently precise data an enrichment of Lu^{176} to 30% is necessary. The line Lu II λ 6463 Å ($^3P_0$-^3D_I) (Fig 1) was measured. The spectrometer (Fig 2) is described ; it consists mainly of a Fabri-Perot interferometer of the type IZS-9. The metallic mirror had multi-layered dielectric coatings produced by T. N. Krylova scientific collaborator of the GOI. A circular stop was used for centering and increasing the light intensity. A diffraction monochromator was used to separate the lines to be investigated. This grating was capable of centering up to 50% of the required line. An additional filter was used

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to eliminate superpositions. The light (emerging) from the spectrometer hits a photomultiplier the signals of which were collected by a bridge scheme. The light intensity of the apparatus, as one of the most important elements, was determined. In this connection the contribution of each individual part of the instrument was taken into account. For the excitation of the lines a gas discharge tube was used with a liquid air cathode. From a series of pictures of natural Lu the spin of Lu^{175} to I = 7/2 was determined from the relative intensities of the components. The separation of the background and the elimination of superpositions as well as a consideration of the changes of the cathodes was made. Tables 1 and 2 show the relative intensities of the two components and a comparison with the theoretical value. The measured value of c/a is 1.31 ± 0.03. The theoretical mean value is found at $c/a = 1.308 \pm 0.012$. Herefrom the nuclear spin I = 7 was determined. The next possible values I = 6 and I = 8 are still

within the error limit. These values are in good agreement with the results obtained by Gallagher and Moszkowski (Ref 9) and Peker (Ref 10). In conclusion, the authors thank S. E. Frish for his interest in the work, V. S. Zolotarev for the production of the enriched preparation, G. K. Yeromin for having supplied natural lutecium, and L. K. Peker for the discussion of the results obtained. There are 5 figures, 2 tables, and 11 references, 5 of which are Soviet.

SUBMITTED: April 15, 1959

24(7), 24(4) SOV/51-6-6-26/34

AUTHORS: Kaliteyevskiy, N.I., Malyshev, G.M. and Chayka, M.P.

TITLE: A Photoelectric Spectrometer with a Fabry-Perot Interferometer (Fotoelektricheskiy spektrometr s interferometrom fabri-pero)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 6, Nr 6, pp 820-822 (USSR)

ABSTRACT: Jacquinot (Ref 1), Chabbal (Ref 2) and Chayka (Ref 3) showed that the speed of a spectrometer with a Fabry-Perot interferometer is much higher than the speed of a similar spectrometer with a diffraction grating. The present paper discusses a photoelectric spectrometer developed at NIFI of the Leningrad State University (Fig 1). High resolving power of the instrument was ensured by a Fabry-Perot interferometer (2 in Fig 1) with dielectric reflecting coatings. 7-layer coatings of TiO_2 and SiO_2 were deposited chemically on this interferometer in T.N. Krylova's laboratory. The interferometer was placed into a hermetically sealed chamber in which the pressure could be varied from several mm Hg to one atmosphere. The uniformity of the scanning rate was ensured by supplying nitrogen from a high-pressure cylinder (~100 atm) through a narrow capillary 6 to the interferometer chamber. Interference rings were focused in the plane of the slit of a diffraction monochromator 8. A circular diaphragm 1 was used to separate out the required portion of the central interference ring. A diffraction spectrum of the 7th

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A Photoelectric Spectrometer with a Fabry-Perot Interferometer

order was used in the green region and the 5th order was used in the red region. High angular dispersion of the instrument made it possible to use wide slits and this ensured high speed of the apparatus. To avoid transposition of the diffraction-spectrum orders another monochromator (3) with a constant deviation angle was used between the source of light (4) and the interferometer (2). The light signal from the diffraction monochromator (8) was recorded by means of the photomultiplier, d.c. amplifier and a recording potentiometer EPP-09. Four types of photomultipliers were used: FEU-17 in the blue and green regions, FEU-12 and FEU-14 in the yellow and red regions and FEU-22 for wavelengths longer than 6600 Å. The apparatus described was used to record the hyperfine structure of lines of certain isotopes of lutecium, gadolinium and holmium. Fig. 2 shows the record of the hyperfine structure of the holmium line at 5983 Å. A hollow-cathode discharge tube was used as the source of light. There are 2 figures and 6 references, 4 of which are Soviet and 2 French.

Card 2/2

21 (1)

AUTHORS: Kaliteyevskiy, N. I., Chayka, M. P., Pacheva, I. Kh., Prokkin, E. Ye. SOV/56-37-3-57/62

TITLE: Nuclear Moments of the Odd Gadolinium Isotopes

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3(9), pp 882 - 884 (USSR)

ABSTRACT: The present "Letter to the Editor" contains an abundance of details partly taken from the authors' own investigations and partly from other publications. In an earlier paper (Ref 1) the hyperfine structure of the 3 lines of Gd I: 5015, 5103, and 5251 Å was investigated by means of a photoelectric spectrometer. The investigations were carried out on the very pure isotopes Gd^{155}(97.3%) and Gd^{157}(91.4%). Both isotopes have the spin I = 3/2. The magnetic moments: $\mu_{155} = -0.32 \pm 0.04$, $\mu_{157} = -0.40 \pm 0.04$. The quadrupole moments: $Q_{155} = 1.6 \cdot 10^{-24} cm^2$, $Q_{157} = 2 \cdot 10^{-24} cm^2$; these values are nearly double as high as those found by Speck. The internal quadrupole moments $Q_o^{155} = 8 \cdot 10^{-24} cm^2$ and $Q_o^{157} = 10 \cdot 10^{-24} cm^2$ agree as to the order

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of magnitude with those obtained according to the method of the Coulomb excitation of the gadolinium nuclei. The deformation parameters were found to amount to $\delta_{155} = 0.31$ and $\delta_{157} = 0.37$. With respect to the gyromagnetic ratios g_K and g_R (of the internal and collective motions) data, which were obtained from Nilsson's tables, are compared with those obtained by other (Western) authors. Calculations resulted in $g_{K\ 155} = -0.8$ nuclear magnetons and $g_{K\ 157} = -0.9$ nuclear magnetons, $g_{R\ 155} = g_{R\ 157} = 0.7$. The data concerning the g and δ are finally compared with those obtained by Gauvin. The authors thank V. S. Zolotarev for placing the isotopes at their disposal, and L. K. Peker for his advice and discussions. There are 9 references, 2 of which are Soviet.

ASSOCIATION: Fizicheskiy institut Leningradskogo gosudarstvennogo universiteta (Institute of Physics of Leningrad State University)

SUBMITTED: June 19, 1959

KALITEYEVSKIY, N.I.

SOV/53-69-1-10/11

24(4),24(7)
AUTHORS: Bogdanova, I. P., Bochkova, O. P., Zaydel', A. N., Zakharova, V. M., Kagan, Yu. M., Kalitayevskiy, N. I., Penkin, N. N., Chayka, M. P., Shukhtin, A. M., Shyrb, L. V.

TITLE: Sergey Eduardovich Frish (Sergey Eduardovich Frish). On the Occasion of His Sixtieth Birthday (K shestidesyatiletiyu so dnya rozhdeniya)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 69, Nr 1, pp 165-167 (USSR)

ABSTRACT: On June 19th, 1959 the well-known Soviet physicist S. E. Frish, who made a name for himself especially in the field of spectroscopic optics, attained the age of sixty. He began his scientific work as a student at the fiziko-matematicheskoye otdeleniye Leningradskogo universiteta (Physico-mathematical Department of Leningrad University) under D. S. Rozhdestvenskiy. After completing his university studies he continued his work at the Gosudarstvennyy Opticheskiy Institut (Optical State Institute). Since 1934 he held a chair for optics and supervised work at the Physics Department, first as dean and later as director of the Nauchno-issledovatel'skiy fizicheskiy institut LGU (Scientific Research Institute for Physics at Leningrad State University). In 1946 he was appointed Corresponding Member, AS USSR, and took active part in the work of the Academy. He is deputy chairman of the spectroscopy Committee, chief editor of the periodical "Optika i spektroskopiya" and member of the International Committee for spectroscopy at the UNESCO. He first concentrated his scientific interest on steady-state, the systematics of atomic spectra, the Zeeman effect in the sodium and potassium spectra, as well as upon experimental spectroanalytical investigations. In 1930 he started a cycle of works, which was devoted to optical methods of investigating the properties of the atomic nucleus. (An investigation of the interaction between nucleus and electron shell led to the discovery of the hyperfine structure of spectra). He investigated the hyperfine structure of Hg and set up a rule concerning the intercombination between nucleus-spin and parity. He further investigated the fine structure of isotope mixtures, the excitation mechanism of the higher atomic levels, and questions of the interaction of elementary

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particles. Finally, mention is made of his pedagogical activities, especially his courses in physics (which are partly held together with A. V. Tishonova). There are 1 figure and 42 Soviet references.

Card 3/3

21(1)

AUTHORS: Kaliteyevskiy, N. I., Chayka, M. P. SOV/20-126-1-14/62

TITLE: Spectroscopic Determination of the Lu^{176} Nuclear Spin (Spektroskopicheskoye opredeleniye spina yadra Lu^{176})

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 57-58 (USSR)

ABSTRACT: The spin of the Lu^{176} nucleus is determined by the relative intensity of the components of the hyperfine structure of the line Lu II λ 6463 Å ($^3P_0$-$^3D_1$). The scheme of the structure of this line is shown in figure 1. According to the amount of spin of the Lu^{176} nucleus, the ratio of intensities of the two extreme components (c/a) must assume the following values:

I	5	6	7	8
c/a computed	1444	1364	1308	1267

Accurate optical measurements are disturbed by the components of the fine structure of Lu^{175}, but by the choice of a suitable Fabry-Perot interferometer, the 3 components of Lu^{175} and the

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central component of Lu^{176} can be put into agreement. The measurements were made by means of a photoelectric spectrometer with an Fabry-Perot interferometer. The spectrum of the lutecium was excited in a gas discharge tube with a hollow cathode cooled by liquid air. To eliminate possible systematic errors, the hyperfine structure of the line of Lu^{175} was recorded under the same conditions. The curve of intensity of Lu^{176} was then computed by the recorded curve of the hyperfine structure of Lu^{176} (which was averaged over 5 orders of interference), and from the curve thus ascertained, the ratio (c/a) of the components of Lu^{176} was then computed. After considering the correction for the superimposition of the outlines of the components measured, the value 1.31 ± 0.03 was obtained. These computations delivered the dependence of the values for c/a on the nuclear spin I as indicated in the above table. The ratio c/a measured with 1.31 ± 0.03 is in good agreement with the nuclear spin $I = 7$, and also with the presuppositions which are based on the application of Nil'son's scheme (Refs 2, 3). Also according to this scheme, the value $I=7$ is most probable. The next possible values $I = 6$ and $I = 8$ lie beyond the limits of error of the measurements described here. For

checking these measurements, only the spectral line Lu 11λ 6463 Å was used because of the small quantities of enriched preparation. Therefore, also measurements of other spectral lines of lutecium are required for a definite rejection of the spin values I ≠ 7. The authors thank S. E. Frish and L. K. Feker for the discussion of the results, as well as V. S. Zolotarev for the supply of the enriched lutecium preparation. The authors also thank G. K. Yeremin for the supply of pure lutecium preparations of natural isotopic composition. There are 2 figures and 3 references, 1 of which is Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

PRESENTED: January 22, 1959 by A. A. Lebedev, Academician

SUBMITTED: January 13, 1959

PHASE I BOOK EXPLOITATION SOV/5090

Zaydel', A. N., N. I. Kaliteyevskiy, L. V. Lipis, and M. P. Chayka

Emissionnyy spektral'nyy analiz atomnykh materialov (Emission Spectrum Analysis of Atomic Materials) Leningrad, Fizmatgiz, 1960. 686 p. 8,000 copies printed.

Ed. (Title page): A. N. Zaydel', Professor; Ed.: Ye. Ya. Shreyder; Tech. Ed.: A. A. Zabrodina.

PURPOSE: This book is intended for specialists in optics and spectral analysis.

COVERAGE: The book deals with the techniques of spectral analysis used in the determination of the purity of atomic materials. The work does not discuss determinations of components in alloys, including Nb-U and U-Al used in reactor construction, and in alkali metal alloys, nor does it describe the analysis of atomic raw materials (ores and primary products of their processing) since this type of materials can be treated by conventional

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spectral analysis methods. Ch. II, III, IX, XII, XIII, and XIV were written by A. N. Zaydel'; Ch. VI, X, and XI by N. I. Kaliteyevskiy; Ch. VII and VIII by L. V. Lipis; Ch. IV by M. P. Chayka; Ch. I by A. N. Zaydel' in cooperation with N. M. Kaliteyevskiy; and Ch. V. by M. P. Chayka and A. N. Zaydel'. The authors thank S. E. Frish, A. A. Petrov, S. M. Rayskiy, M. A. Yel'yashevich, A. A. Bashilov, V. V. Nalimov, and Ye. Ya. Shreyder. References accompany each of the three parts of the books.

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PART I. PRINCIPLES OF SPECTRAL ANALYSIS AND THE APPARATUS

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SOV/51-8-1-3/40

24.6700

AUTHORS: Kaliteyevskiy, N.I., Chayka, M.P., Pacheva, I.Kh. and Fradkin, E.Ye.

TITLE: Spectroscopic Determination of Nuclear Moments of Odd Gadolinium Isotopes

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 1, pp 13-22 (USSR)

ABSTRACT: The authors investigated photoelectrically the hyperfine structure (h.f.s.) of the 5015.04 Å ($z^{11}G_9 - a^{11}F_8^o$), 5103.45 Å ($z^{11}G_8 - a^{11}F_7^o$), 5251.18 Å ($z^{11}G_8 - a^{11}F_8^o$) lines of separated gadolinium isotopes and natural gadolinium. The purpose of the investigation was to determine the quadrupole moments of Gd^{155} and Gd^{157} and to confirm optically the spin of these nuclei. The authors used a photoelectric spectrometer with a Fabry--Perot interferometer (Refs 7, 8) and a photomultiplier FEU-17 with a good signal-to-noise ratio at low light intensities. The spectrum of gadolinium (used in the form of Gd_2O_3) was excited in an argon-filled discharge tube with a hollow cathode. In order to minimize the Doppler broadening, the hollow cathode was cooled with liquid air and the discharge current was kept below 30 mA (the line-width rose linearly with current, Fig 1). Under such conditions the line width corresponded to that in a gas at 250°K. Even then it was not possible to resolve all the h.f.s.

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Spectroscopic Determination of Nuclear Moments of Odd Gadolinium Isotopes

$Q_{157} = 2$ and $Q_{155} = 1.6 \times 10^{-24} cm^2$.

The magnetic moments were also found:

$\mu_{157} = -0.40 \pm 0.04$ n.m. and $\mu_{155} = -0.32 \pm 0.04$ n.m.

Consequently the moment ratios were:

$Q_{155}/Q_{157} = 0.8 \pm 0.1$, $\mu_{155}/\mu_{157} = 0.79 \pm 0.02$.

The deformation parameters δ of the two nuclides were found to be $\delta_{157} = 0.37$ and $\delta_{155} = 0.31$, and their ratio was $\delta_{155}/\delta_{157} = 0.6$. The gyromagnetic ratios for the internal (g_k) and the collective (g_R) motion were also determined. They were $g_{k157} = -0.9$, $g_{k155} = -0.8$, $g_{R157} = g_{R155} = 0.7$; $g_{k155}/g_{k157} = 0.9 \pm 0.1$. Acknowledgments are made to V.S. Zolotarev for supplying separated gadolinium isotopes and to L.K. Peker for his advice. There are 4 figures, 2 tables and 21 references, 5 of which are Soviet, 10 English, 4 German, 1 Swiss and 1 Danish.

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SUBMITTED: June 19, 1959

S/051/60/009/005/018/019
E201/E191

AUTHOR: Kaliteyevskiy, N.I.

TITLE: Thirteenth Conference on Spectroscopy

PERIODICAL: Optika i spektroskopiya, 1960, Vol. 9, No. 5, p 683

TEXT: The Thirteenth Conference on Spectroscopy was held in Leningrad on July 4-12, 1960. There were 1200 participants, 900 of them from outside Leningrad. At the first plenary session, opened by the Chairman of the Commission for Spectroscopy, Academy of Sciences USSR, S.L. Mandel'shtam, two papers were presented. O.A. Mel'nikov spoke on "The work of Kirchhoff and Bunsen and the contemporary astrophysics", and A.N. Terenin dealt with "Spectroscopy of adsorbed molecules". In seven other plenary sessions, 26 papers were presented on various problems of atomic and molecular spectroscopy and spectroscopy of condensed systems. At sectional sessions (7 sections) 270 papers were read on theory of atomic spectra (15 papers), spectroscopy of plasmas, molecular spectroscopy, optical properties of solids, radiospectroscopy, emission produced

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S/051/60/009/005/018/019
E201/E191

Thirteenth Conference on Spectroscopy

by shock waves, spectroscopic determination of atomic constants, hyperfine structure and isotopic shift, and on other subjects.

There are no figures, tables or references.

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S/056/60/039/004/003/048
B004/B070

24.6700

AUTHORS: Kaliteyevskiy, N. I., Fradkin, E. Ye., Chayka, M. P.

TITLE: Quadrupole Moments of Odd Barium Isotopes 19

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 4(10), pp. 954-956

TEXT: In order to determine the quadrupole moments of odd barium isotopes, a study of the deviation of the hyperfine structure from the interval rule was made. The structure of $^3P_1$ term of both the lines of Ba I: λ = 4599.7 A and λ = 4573.9 A was determined by means of the hyperfine structure of highly enriched separated isotopes Ba^{135} (89.3%) and Ba^{137} (78.8%). Both the isotopes have spin 3/2. Therefore, the structure of the $^3P_1$ term is characterized by two independent intervals of the hyperfine structure whose magnitudes are related to the constants A and B of the interval function $W_F = W_J + (1/2)AC + B\left[C(C+1) - (4/3)I(I+1)J(J+1)\right]$; C = F(F+1) - I(I+1) - J(J+1); F = 5/2, 3/2, 1/2.

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Quadrupole Moments of Odd Barium Isotopes

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B004/B070

The experimentally observed values of the intervals and the constants A and B are given in a Table. The quadrupole moments were calculated from the constants:
$Q(Ba^{135}) = (0.25\pm0.12)\cdot10^{-24}$ cm^2, $Q(Ba^{137}) = (0.2\pm0.1)\cdot10^{-24}$ cm^2. Since for both the isotopes $Q>0$, Ba^{135} as well as Ba^{137} must have a hole in the $2d_{3/2}$ neutron level. The authors thank V. S. Zolotarev for making available the isotopes, L. K. Peker for discussions, and B. A. Strugach for calculations. There are 1 table and 9 references: 4 Soviet, 2 US, 3 German, and 1 Swedish.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: May 12, 1960

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24 6200 1137, 1138, 1395

S/054/61/000/001/003/008
B117/B203

AUTHORS: Kaliteyevskiy, N. I., Chayka, M. P., Fradkin, E. Ye.

TITLE: Application of methods of optical spectroscopy to study the properties of atomic nuclei

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, no. 1, 1961, 25-33

TEXT: The authors studied the possibility of applying the methods of optical spectroscopy to study the properties of atomic nuclei. When checking these methods, they used, above all, the data found by themselves in 1959-60. The relative intensities of hyperfine structural components were measured with a photoelectric spectrometer with a Fabri-Pérot interferometer (Ref. 2: N. I. Kaliteyevskiy, G. M. Malyshev, M. P. Chayka. Optika i spektroskopiya, VI, 820, 1959). The light intensity of this instrument was higher by at least one order of magnitude than that of a monochromator with diffraction grating of equivalent resolving power. The investigation of only 1 mg of Lu_2O_3, which was

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Application of methods of...

enriched with Lu^{176} up to about 30 %, yielded quite clearly a spin value of I = 7. This investigation proved the importance of the optical method for determining the nuclear spin, as well as its suitability as compared with other methods. The same conclusions were drawn when considering results obtained in the measurement of sublevel ranges of hyperfine structure. With sufficient resolving power of the spectrometer, the reading of components with I>J gives a unique spin value. If the resolution of components is limited by the Doppler broadening it is generally possible to disintegrate, with sufficient uniqueness, the contour of the line into a certain number of components at a high signal-to-noise ratio. When determining mechanical nuclear moments, the interference method can, of course, not yet be regarded as perfect. The problem as to the accuracy of the method of determining magnetic and quadrupole moments requires a closer investigation, since direct measurement of these moments is impossible. In experimental determinations of hyperfine structural constants, systematic and random errors are unavoidable. Here, the authors deal with the role of random errors. An analysis of experimental data shows that in the investigation of a well resolved structure the measurement of hyperfine structural ranges is well possible at present

with an accuracy of $\sim 0.5 \cdot 10^{-3} cm^{-1}$. The errors of measurement increase with a worse resolution if it is necessary to disintegrate the contour. Table 3 gives the results of measurement of the hyperfine structure of barium isotopes as an example of such an estimate. All data are given in millikaiser (1 mks = $10^{-3} cm^{-1}$). The errors of measurement are shown to be no less than 0.5 %. Approximation methods must be used to calculate absolute values of magnetic moments. For this reason, resonance methods permitting a direct measurement of μ are preferable to the optical method. In those cases where direct methods are not applicable, values of magnetic moments may be calculated both by optical and radiospectroscopic measurement with the same accuracy. When determining quadrupole moments, quantum-mechanical approximation methods are indispensable for all methods basing on the interaction of nucleus and electron shell. When estimating the accuracy of such calculations, the authors made the following statement: In single-electron systems, the entire theoretical calculation error is 5-10 % for magnetic moments, and 15-25 % for quadrupole moments. In each individual case, the admixture of many-electron states can be considered, and $\langle 1/r^3 \rangle$ can be determined from the totality of data. This

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Application of methods of...

increases the accuracy of determination. For many-electron systems, it is difficult at present to make a numerical estimate of calculation errors which may be different for each individual case. In each case where it is difficult to estimate the errors occurring in the calculation of nuclear moments from the hyperfine structure of the term investigated, it would be convenient to study other terms of the respective isotope. Similar values of moments for several terms of varying configuration give a certain security that errors do not become too high. It can be expected to increase the calculation accuracy by completer joint theoretical and experimental investigations of hyperfine and fine structures of atomic spectra, as well as of gyromagnetic atomic relations. The authors thank B. A. Strugach for making a number of computations. A. A. Manenkov, A. M. Prokhorov, and G. Kopferman are mentioned. There are 6 figures, 4 tables, and 18 references: 8 Soviet-bloc and 10 non-Soviet-bloc.

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Application of methods of...

Legend to Table 3: Results of measurement of the hyperfine structure of odd barium isotopes. (a) Ranges and constants of hyperfine structure; (b) isotopes.

Интервалы и константы СТС (a)	Изотопы (b)	
	Ba^{135}	Ba^{137}
5/2 → 3/2	83,6 ± 0,6	93,1 ± 0,4
5/2 → 1/2	137,4 ± 0,7	151,5 ± 0,7
A	34,0 ± 0,2	37,7 ± 0,2
B	−1,2 ± 0,6	−0,9 ± 0,6

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S/048/61/025/001/020/031
B029/B060

24.6700

AUTHORS: Kaliteyevskiy, N. I., Chayka, M. P., Pacheva, I. Kh., Fradkin, E. Ye.

TITLE: Nuclear moments of odd isotopes of gadolinium

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 1, 1961, 111-114

TEXT: This is a report of studies which have been described in a previous preliminary communication. Several data have now been better defined by additional measurements and by improving the calculation method. The authors used a photoelectric spectrometer and a Fabry - Perot spectrometer to study the hyperfine structure of the three lines of GdI: $\lambda = 5015$ A ($z^{11}G_9 - a^{11}F_8$); $\lambda = 5103$ A ($z^{11}G_8 - a^{11}F_7$) and $\lambda = 4743$ A ($y^{11}F_3 - a^{11}F_4$). The measurements were made on separated isotopes of gadolinium with a high-purity degree (Gd^{155} - 97.3%,

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S/048/61/025/001/020/031
B029/B060

Nuclear moments of odd isotopes of...

Gd^{157} - 91.4%). The components of the fine structure of gadolinium lines are so close to one another (15 to 20 mK) that the fine structure under the given experimental conditions could not be resolved. It can be resolved only if one presupposes four sublevels of the hyperfine structure of the investigated energy levels of Gd^{157} and Gd^{155}. This unequivocally yields for both isotopes the spin 3/2. The position of the components of the hyperfine structure was determined on the basis of the splitting of the line structure taking account of all superimposing isotopes belonging to other elements. The calculations were carried out for the four intensive diagonal components of the line investigated. The three independent intervals $\sigma(1\text{-}2)$, $\sigma(1\text{-}3)$, $\sigma(1\text{-}4)$ were experimentally determined for every line of the two isotopes. The ratio of the magnetic moments of Gd^{155} and Gd^{157} was established by the direct combination of the experimental data:

$$\frac{\mu_{155}}{\mu_{157}} = \frac{\sigma_{155}(1\text{-}2) - \sigma_{155}(1\text{-}3) + \sigma_{155}(1\text{-}4)}{\sigma_{157}(1\text{-}2) - \sigma_{157}(1\text{-}3) + \sigma_{157}(1\text{-}4)}.$$

The ratio of the quadrupole moments of Gd^{155} and Gd^{157} can be calculated with a good accuracy by

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Nuclear moments of odd isotopes of...

Casimir's formula. The results of calculations carried out by two different methods are given in Table 1. The value of the ratio of magnetic moments thus found is in good agreement with more recent and more accurate measurements of this quantity by the method of the paramagnetic resonance. The value $Q_{155}/Q_{157} = 0.8 \pm 0.1$ found by the authors contradicts, however, the spectroscopic measurements by O. R. Speck, who found $Q_{155} > Q_{157}$. Therefore, it is of interest to compare the data found by the authors with results obtained by other methods. The most accurate method is evidently that by V. Ramsak et al. (Ref. 10). Like the authors of the present article, these authors also found $Q_{155} < Q_{157}$, but a difference appears in the qualitative evaluation of Q_{155}/Q_{157}. For the calculation of the absolute values of the magnetic moment and the quadrupole moment from spectrometric measurements it is necessary to estimate the matrix elements $\langle H(0) \rangle$ and $\left\langle \frac{\partial^2 u}{\partial z^2}(0) \right\rangle_J$, which is, however, possible only by approximation. The

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Nuclear moments of odd isotopes of...

authors found $Q_{155} = 1.45 \cdot 10^{-24}$ cm^2 and $Q_{157} = 1.8 \cdot 10^{-24}$ cm^2. The deformation parameters were then estimated from the values of the intrinsic quadrupole moments: $\delta_{155} = 0.27$ and $\delta_{157} = 0.33$. Finally, for the gyromagnetic ratio the authors found $g_{K\ 155}/g_{K\ 157} = 0.9$, which is in good agreement with experimental data published by other authors. V. S. Zolotarev is thanked for having supplied the pure isotopes and L. K. Peker for his discussions. The article under consideration is the reproduction of a lecture delivered at the 10th All-Union Conference on Nuclear Spectroscopy, which took place in Moscow from January 19 to 27, 1960. There are 1 figure, 2 tables, and 12 references: 5 Soviet-bloc and 6 non-Soviet-bloc.

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gos. universiteta im. A. A. Zhdanova (Scientific Research Institute of Physics of Leningrad State University imeni A. A. Zhdanov)

Nuclear moments of odd isotopes of...

Legend to Table 1: Ratios of magnetic and quadrupole moments of odd gadolinium isotopes

ratio		λ = 5015 A	λ = 5103 A	λ = 4743 A	mean value
$\frac{\mu_{155}}{\mu_{157}}$		0.80±0.02	0.77±0.01	0.79±0.02	0.78±0.03
$\frac{Q_{155}}{Q_{157}}$	1st method	0.76±0.04	0.82±0.02	0.88±0.05	0.8 ±0.1
	2nd method	0.76±0.03	0.82±0.05	0.86±0.07	0.8 ±0.1

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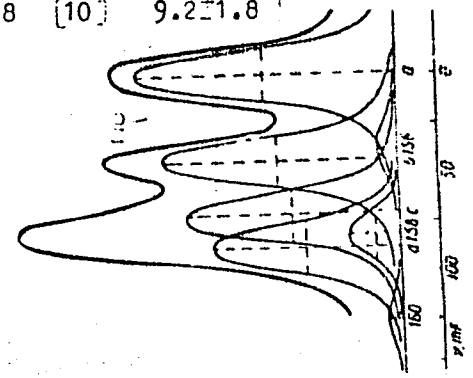
Nuclear moments of odd isotopes of...

Legend to Table 2: Values of intrinsic quadrupole moments Q_o and ratios Q_{o155}/Q_{o157} found by the method of Coulomb excitation.

Q_{o155}	Q_{o157}	$\frac{Q_{o155}}{Q_{o157}}$	Ref.	Q_{o155}	Q_{o157}	$\frac{Q_{o155}}{Q_{o157}}$	Ref.
6.8	6.2	1.1	[8]	6.7±2.4	8.8±1.8	0.76	[11]
7.6	8.1	0.94	[9]			1.04	
6.5	6.6	0.98	[10]	9.2±1.8			



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KALITEYEVSKIY, N.I.; FRADKIN, E.Ye.

Quadrupole moments and isotopic displacements in barium isotopes. Izv. AN SSSR. Ser. fiz. 25 no.9:1178-1179 '61. (MIRA 14:8)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A.A.Zhdanova.
(Barium--Isotopes)

S/032/62/028/001/002/017
B125/B138

AUTHORS: Zil'bershteyn, Kh. I., Kaliteyevskiy, N. I., Razumovskiy, A. N., Fedorov, Yu. F.

TITLE: Hollow-cathode discharge for analysis of impurities in silicon

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 1, 1962, 43-45

TEXT: The authors studied the spectrum analysis of impurities in silicon with the aid of a hollow thermionic cathode. These impurities were concentrated by treating Si powder with fluoric and nitric acid vapors on a teflon film. Teflon films with a standard and with the test specimen were put at the bottom of a hollow carbon cathode which was heated to 550°C. On complete volatilization of the teflon specimen and standard became attached to the bottom of the cathode. The spectra were taken by a hollow-cathode discharge in a helium current (10 - 15 mm Hg, discharge amperage 900 ma), using an ИСП-22 (ISP-22)-spectrograph and type СП-2(SP-2) photographic plates. The spectral lines of both the volatile and non-volatile impurities had maximum intensity at 800 - 1000ma.

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Since the impurity elements in the teflon could not be determined accurately enough by the present method the silicon powder contained in the two half cylinders of a hollow cathode (Fig. 1) was pretreated by acid vapors. The impurity concentrate was attached to the interior of the cathode by two drops of a solution of polystyrene in benzene. Discharge in a composite hollow cathode takes place in the same way as in an ordinary one. The spectral lines of the volatile impurities Zn, Pb, In have maximum intensity at 400 - 600 ma, but remain almost constant when the amperage is further increased. Those of the less volatile impurities Fe, Ni, Mn, Mg and others have maximum intensity at 800 - 1000 ma. The totality of the elements was therefore determined at 800 - 900 ma with a 2 min discharge. Screens between the cathodes prevented undesirable side effects. Under the conditions described, the absolute accuracy of quantitative analysis is $3\text{-}5\cdot10^{-10}$ g Ag, Mn, Cu; $6\cdot10^{-10}$ g Ga, In; $(3\text{-}5)\cdot10^{-9}$ Gg Al, Ni; $(6\text{-}7)\cdot10^{-9}$ g Mg, Fe. The accuracy of the Mg, Al, Fe, Cu determination depends on the traces of these elements in the cathode material. Reproducibility is poor. The measuring arrangement is similar to that of Yu. I. Korovin, L. V. Lipis (Optika i spektroskopiya, 5, 3, 334

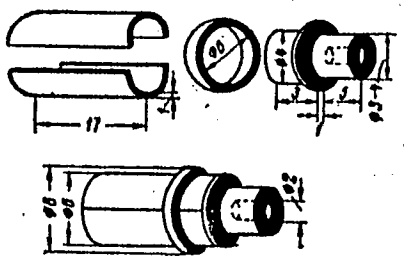
Hollow-cathode discharge for ...

(1958)). The present paper was the subject of a lecture delivered at the soveshchaniye po spektroskopii (Conference on Spectroscopy) in July 1961 in Gor'kiy. Kh. I. Zil'bershteyn, Priryutko et al. (Zavodskaya laboratoriya, XXV, 12, 1474 (1959)) are referred to. There are 2 figures and 2 Soviet references.

ASSOCIATION: Institut khimii silikatov (Institute of Silicate Chemistry)

Fig. 1: hollow cathode used for analysis (dimensions in mm).

FIG. 1



Card 3/3

FRISH, S.E., otv. red.; BOBOVICH, Ya.S., kand. fiz.-matem. nauk, red.; VOL'KENSHTEYN, M.V., doktor fiz.-matem. nauk, red.; GALANIN, M.D., doktor fiz.-matem. nauk, red.; DRUKAREV, G.F., doktor fiz.-matem. nauk, red.; YEL'YASHEVICH, M.A., akademik, red.; KALITEYEVSKIY, N.I., doktor fiz.-matem. nauk, red.; KUSAKOV, M.M., doktor khim. nauk, red.; LIPIS, L.V., doktor tekhn.nauk, red.; PEKAR, S.I., doktor fiz.-matem. nauk, red.; PROKOF'YEV, V.K., doktor fiz.-matem. nauk, red.; SOKOLOV, N.D., doktor fiz.-matem. nauk, red.; FEOFILOV, P.P., doktor fiz.-matem. nauk, red.; CHULANOVSKIY, V.M., doktor fiz.-matem. nauk, red.; SHPOL'SKIY, E.V., doktor fiz.-matem. nauk, red.; YAROSLAVSKIY, N.G., kand. fiz.-matem. nauk, red.; LEKSINA, I.Ye., red. izd-va; PENKINA, N.V., red. izd-va; NOVICHKOVA, N.D., tekhn. red.; KASHINA, P.S., tekhn. red.

[Physical problems in spectroscopy]Fizicheskie problemy spektroskopii; materialy. Moskva, Izd-vo Akad. nauk SSSR. Vol.1. 1962. 474 p. (MIRA 16:2)

1. Soveshchaniye po spektroskopii. 13th, Leningrad, 1960. 2. Chlen-korrespondent Akademii nauk SSSR (for Frish). 3. Akademiya nauk Belorusskoy SSR (for Yel'yashevich).
(Spectrum analysis)

MARKOVA, G.V.; KALITEYEVSKIY, N.I.; CHAYKA, M.P.

"Observation Du Croisement Des Sous-Niveaux Zeeman Dans De Natrium."

Report presented at the Spectroscopicum, 11th Intl. Colloq, Belgrade, Yug, 30 Sep - 4 Oct 63.

MARKOVA, G. V.; KALITEYEVSKIY, N. I.; CHAVRA, M. P.

"Observation du Croisement des Sous-Niveaux Zeeman dans le Natrium."

report submitted to 11th Intl Spectroscopy Colloq, Belgrade, 30 Sep-4 Oct 63.

Physics Inst, Leningrad Univ.

L 20461-65 EWG(j)/EWA(h)/FBD/EWT(l)/EWT(m)/EPF(c)/EEC(k)-2/EEC(t)/T/EWP(t)/
ERC(b)-2/EWP(k)/EWP(b)/EWA(c)-2/EWA(h) Pn-4/Po-4/Pe-4/Pab/Pl-4/P1-4

ACCESSION NR: AP4041033 S/0034/64/000/002/0040/0046

AUTHOR: Kaliteyevskiy, N. I.; Razumovskiy, A. N.; Chuyko, M. P.; Cherenkovskiy, V. A.

TITLE: Experiments with gaseous lasers

SOURCE: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 2, 1964, 40-46

TOPIC TAGS: gaseous laser, continuous gaseous laser, laser beam structure, helium neon laser, stimulated emission

ABSTRACT: The authors have experimented with a continuous gas laser (He:Ne=1:7) working on a wavelength of 1.15 μ which corresponds to the 4s-2p transition in neon. The study consisted of an investigation of: 1) the intensity of the generated power [illegible] as a function of the input power, the [illegible] the [illegible], [illegible], 2) the contribution to radiation of the various parts of the [illegible], and 3) the structure of the generated beam. It was established on the basis of experiments that the intensity of the power [illegible] reaches a maximum with [illegible] the input power, and then decreases. In addition to the [illegible] [illegible] [illegible] much weaker than [illegible]

Card 1/2

L 20481-65

ACCESSION NR: AP4041833

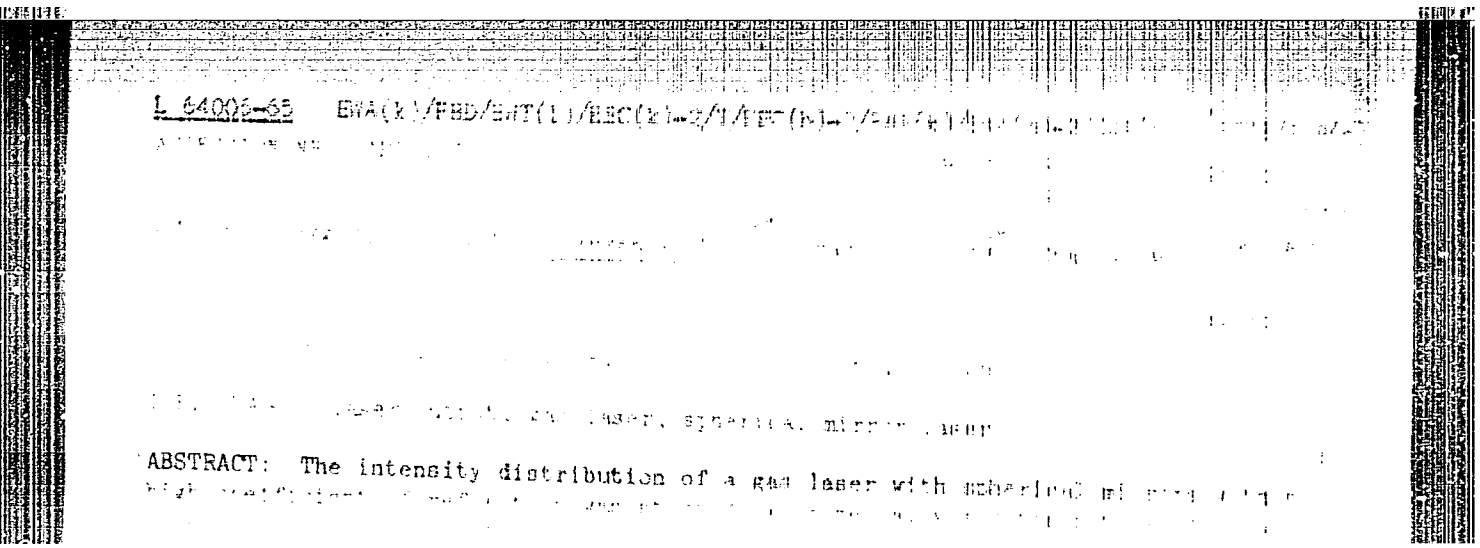
observed with a diffraction grating. It disappears at very high input. The photograph of the beam shows a ring regardless of the adjustment of the lens. This is explained by the coherence of the stimulated radiation. Orig. art. has: 8 figures.

ASSOCIATION: None

SUBMITTED: 17Jan64 ENCL: 00

SUB CODE: EC NO REF SOV: 003 OTHER: 001

Card 2/2



L 6400[illegible]-65 EWA(k)/FBD/EWT(l)/EEC(k)-2/T/EWP(k)/EWA(h) [illegible]

[illegible] laser, spherical mirror, [illegible]

ABSTRACT: The intensity distribution of a RAM laser with [illegible]

APPROVED FOR RELEASE: 08/10/2001 CIA-RDP86-00513R000620120010-9"

ASSOCIATION: none

SUBMITTED: 19Sep64
NO REF SOV: 002
Card

ENCL: 00
OTHER: 002

SUB CODE: EC
ATD PRESS: 4057

L 41096-66 EWT(l)/EEC(k)-2/FBD/EWP(k)/T IJP(c) WW
ACC NR: AP6026983 SOURCE CODE: UR/0051/66/021/002/0258/0260

AUTHOR: Kaliteyevskiy, N. I.; Popov, M. M.; Rymarchuk, Yu. A.; Tolchinskaya, T. B.; Chayka, M. P.

ORG: none

TITLE: Gas laser generation power in nearly confocal resonators

SOURCE: Optika i spektroskopiya, v. 21, no. 2, 1966, 258-260

TOPIC TAGS: gas laser, neon helium laser, infrared laser, LASER ENERGY, NEON, HELIUM

ABSTRACT: A qualitative explanation of the mechanism responsible for the appearance of the maximum of power generation in a nearly confocal resonator of a gas laser is offered. The generation of a neon-helium laser at $\lambda = 0.63$ and 1.15 μ was studied. It is shown that because of a decrease in the figure of merit in the region of instability of the generation, a minimum should appear on the curve representing the generation power as a function of L (L being the distance between the mirrors). The width of the minimum is equal to the width of the instability region traversed, and is determined by the difference in the mirror radii ΔR. In a study of a resonator with mirrors whose radii $R_1 = R_2 = 250$ cm within 0.4 cm, minima were obtained whose width was greater than 0.4 cm and was varied by shifting the discharge tube along the resonator axis and replacing the tube by another. The [illegible] to the distorting influence of the exit windows of the discharge tube. It is shown

Card 1/2 UDC: 621.375.9:535 (206.3)

ACC NR: AP6026983

that a tube window built with an error of $\sim\frac{\lambda}{2}$ and consisting of a lens with a focal length of 100 m causes the appearance of a region of instability of width $\Delta L = 6$ cm at $R = 250$ cm. The region of instability was found in similar fashion for a resonator where the space between one of the mirrors and the window is filled with a gas with refractive index N_r different from the refractive index of air, N_a. In this case, $L = \frac{N_r - N_a}{N_r} R$. These calculations were confirmed in a series of experiments.

Authors are grateful to E. Ye. Fradkin for his discussion and to A. N. Razumovskiy for his assistance in the experiment. Orig. art. has: 2 figures and 1 formula. [27]

SUB CODE: 20/ SUBM DATE: 14Mar66/ ORIG REF: 005/ OTH REF: 002/ ATD PRESS: 5057

LEVINA, M.Ye.; KUKHAREVA, I.N.; KALITIN, V.I.

Phase diagrams of the systems Na_2BeF_4 – Na_3PO_4 and K_2BeF_4 – K_3PO_4. Izv. vys. uchob. zav.; khim. i khim. tekh. 8 no.1: 3-10 '65. (MIRA 18:6)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra obshchey khimii.

KALITAYEVSKIY, [illegible]

Desmoid fibromas. Arkh. pat. 27 no.4:78-79 '65.

(MIRA 18:5)

1. Patologoanatomicheskoye otdeleniye (zav. P.F.Kalitayevskiy) Gorodskoy klinicheskoy bol'nitsy no.67 (glavnyy vrach F.S. Petrushko), Moskva.

SURA, V.V., kandidat meditsinskikh nauk; SOKOLOVA, V.P.; KALITKYEVSKIY, P.F.

Diffuse myocarditis as a symptom of medicinal hypersensitivity. Sov. med. 20 no.5:45-49 My '56. (MLRA 9:9)

1. Iz gorodskoy bol'nitsy No.27 (glavnyy vrach N.G.Doyev) Moskvy i kafedry obshchey i gospital'noy terapii (zav.-deystvitel'nyy chlen Akademiimeditsinskikh nauk SSSR prof. Ye.M.Tareyev) sanitarno-gigiyenicheskogo fakul'teta I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova

(MYOCARDITIS, etiology and pathogenesis, drug allergy (Rus))
(ALLERGY, etiology and pathogenesis, to drugs, causing myocarditis (Rus))